MAHARAJAH'S COLLEGE OF PHARMACY

Approved by AICTE, PCI,
New Delhi, SBTET, Govt of AP
Affiliated to Andhra University, VSKP,
Phoolbaugh, Vizianagaram -535 002,A.P

Report on

Three day workshop cum training on Novel Applications of FTIR in Identifying Metabolic Disorders & Insights into good Research Practices in Pharmaceutics

On 4th, 5th & 6th Dec, 2019

Workshop Report

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1. Background

This program intends to bridge the gap between academic training and industry needs in the area of Pharmaceutical Sciences. The program was conducted for three days.

This workshop is designed to train graduates, postgraduate students, researchers and academicians. The tentative program consisted of lectures and hands on practical which is intended to provide a clear understanding of theory, research techniques and methodologies involved in handling of sophisticated instruments and their novel applications.

Our diverse and dynamic group of resource persons provided in-depth insight to the theme of the workshop.

The Participants explored the training sessions on instruments like FTIR-Spectrophotometer, HPLC, Tablet compression machine, Punching machine, dissolution apparatus, UV-Visible spectrophotometer, colorimeter, Nephlometer, Fluorimeter, Conductometer, pH meter, Karl Fischer Titrator, Flame Photometer, TLC, and their novel applications.

This report contains background information that was presented to participants, summarizes workshop discussions and catalogs potential adaptation options and next steps that were identified by workshop participants. This report can be used to address the impacts of seminars and workshops in bridging the gap between industry and academia.

The work shop focused on the following aspects:

- **Modeling and comparison of dissolution profiles and IVIVC.**
- **Analysis of blood biomarkers using FTIR in metabolic disorders.**
- **Application of chromatographic techniques in pharmaceutical analysis.**
- **Application of Statistical optimization techniques in Pharmaceutical Research.**
- **Selection, collection and processing of biological samples for FTIR analysis - precautions and troubleshooting.**
- **Pathophysiological basis of selecting biomarkers in obesity & metabolic disorder research.**

The work shop focused on the following practical sessions:

Hands on training on

- **Diagnostic investigations using the FT-IR fingerprinting of blood samples from healthy volunteers and diabetic subjects**
- **Training the participants to perform diagnostic investigations using the infrared spectra from samples of healthy volunteers and diabetic subjects**
- **Insight to principles of instrumentation techniques**
- **Good Research Practices in preparation and evaluation of dosage forms.**
- **Display of novel formulations.**
- **Exposure of equipment and machinery.**
- **Training on strategies, optimization and configuration of HPLC**

2. Objective

The primary objective of this event was to bridge the gap and to bring together the strategies of academia and Pharma. Industry and medical research scientists. The workshop intends to train the participants to perform diagnostic investigations using the infrared spectra generated from the whole blood, serum and plasma samples of healthy volunteers, diabetic subjects and rodent models. The workshop proposed to conduct simultaneous theoretical and practical sessions on Multivariate statistical analysis, Hierarchical cluster analysis, Principal component analysis and other statistical tools.

3. Expected outcome of the Workshop

The participants will be acquainted and familiarized with hands on training on appropriate sample preparation, different sampling modes as well as important advances in spectral data acquisition, data processing, quality control, spectral pre-processing and result presentation using multivariate analysis in the field of metabolic finger printing using FT-IR spectroscopy. The participants will also be acquiring knowledge on novel formulations, equipment, instrumentation principles and related machinery.

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4. Participants

The workshop was well attended. There were 250 participants in the workshop. The participants were B. Pharmacy students, M. Pharmacy students, BSc. Students from PG college, researchers and academicians invited from Andhra University, affiliated pharmacy colleges and M.Sc. life sciences.

LIST OF PARTICIPANTS

S. No	Name of the college	No
1.	Maharajah's college of Pharmacy	93
2.	Saint Ann's College of Pharmacy	26
3.	Raghu College of Pharmacy	11
4.	Yelamarthy College of Pharmacy	4
5.	Vignan College of Pharmacy	3
6.	Andhra University college of Pharm. Sciences	2
7.	Gitam College of Pharmacy	3
8.	Sri Venkateswara College of Pharmacy	8
9.	Shivani College of Pharmacy	28
10.	Maharajah's Post Graduate Courses	14
TOTAL REGISTRATIONS		192

5. Workshop Sessions and Discussions

Day 1: 4th Dec, 2019 (Wednesday)

8:30 am

Registration

There were 192 registrations for the workshop

9:00 am - Inauguration

Convener, Dr. P. Udaya Shankar, Principal, in his opening remarks emphasized on the significance of training on FTIR and good Research Practices in Pharmaceutics.

Chief Guest, Dr. K. V. Ramana Murthy, Principal, A.U College of Pharmaceutical Sciences, Vskp inaugurated the workshop. In his message, he congratulated the college for conducting such a productive event and wished the college all the very best in its future.

Director, Dr. I. Bhaskar Reddy, in his message appreciated the college for conducting an event which caters to the enhancement of practical skills

Guest of Honour: Dr. Nemani Hari Shankar,
Scientist-E, ICMR NIN, Hyderabad, Telangana.
In his message, he congratulated the college for conducting such a workshop and encouraged the college students to participate in the events and activities

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9:30 am - 11:00 am

LECTURE-1 Modeling and comparison of dissolution profiles and IVIVC by

Dr. **K. V. Ramana Murthy,** Principal**,** Andhra University College of Pharmaceutical Sciences, Visakhapatnam, Andhra Pradesh

The key points discussed by Dr. **K. V. Ramana Murthy** were

- BCS classification and its criteria in various aspects
- BDDCS classification.
- IVIVC
- Setting Dissolution Specifications
- Applications of IVIVC, BCS, BDDCS.
- Release exponent and solute release mechanisms
- Mathematical models for dissolution profiles
- USP Dissolution Apparatus

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11:00 am - 11:15 am - Tea break

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11:15 am - 12:30 pm

LECTURE-2 on **Analysis of blood biomarkers using FTIR in metabolic disorders by**
Dr. Dr. Nemani Hari Shankar, Scientist-E, ICMR NIN, Hyderabad, Telangana.

The key points discussed by **Dr. Nemani Hari Shankar** were

- Drug discovery in pharmacy research – Role of animal models.
- Animal models and re-search models
- CDESCO guidelines
- AEC considerations
- Pre clinical efficacy and safety evaluation of Oryzanol.
- Pilot Study – Division of The Animals
- Types of animals used for studies in ICMR NIN

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12:30 pm - 1:30 pm – Lunch

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1.30 pm – 3.00 pm TRAINING SESSION

Diagnostic investigations using the FT-IR fingerprinting of blood samples from healthy volunteers and diabetic subjects by
Dr. Ajay Godwin Potnuri, ICMR centenary post doctoral fellow, ICMR NIN , Tarnaka, Hyderabad, Telangana.

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Insight to principles of Instrumental techniques

Good Research Practices in preparation and evaluation of dosage forms.

Display of novel formulations

The session was very interactive and the delegates actively participated in the interaction.

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3:00 Pm - 3:15 Pm - Tea break

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3.15 pm - 4.15 pm E-Poster presentations

FELICITATIONS ON DAY 1

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Day 2: 5th Dec, 2019 (Thursday)

Chair person

Dr. B. S. N. Raju,

Principal, School of Management studies ,
MR. PG college, Vizianagaram,
Andhra Pradesh

9:30 am - 11:00 am

LECTURE-1 Application of chromatographic techniques in pharmaceutical analysis by **Dr. Y.Rajendra Prasad**, Professor, Andhra University College of Pharmaceutical Sciences, Visakhapatnam, Andhra Pradesh.

The key points discussed by **Dr. Y.Rajendra Prasad** were

- Introduction to Chromatography
- Classification
- Principles of Chromatography
- Techniques involved
- Brief view of paper, column, GC, LC, HPLC, LC-MS, GC-MS.
- HPLC Vs Liquid Chromatography
- Detectors used in Chromatography
- Applications of Chromatography.

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11:00 am - 11:15 am - Tea break

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11:15 am - 12:30 pm

LECTURE-2 on Application of Statistical optimization techniques in Pharmaceutical Research by **Dr. G. Girija Shankar**, Professor, Andhra University College of Pharmaceutical Sciences, Visakhapatnam, Andhra Pradesh.

The key points discussed by **Dr. G. Girija Shankar** were

- Optimisation and its introduction.
- Conventional development process
- Quality by Design
- Brief view on Experimental Design.

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12:30 pm - 1:30 pm – Lunch

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1.30 pm – 3.00 pm TRAINING SESSION

Training the participants to perform diagnostic investigations using the infrared spectra samples of healthy and diseased rodent models by Dr. A. Lingesh, G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad, Telangana.

The session was very interactive and the delegates actively participated in the interaction.

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3:00 Pm - 3:15 Pm - Tea break

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3.15 pm - 4.15 pm Pharma Quiz

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Day 3: 6th Dec, 2019 (Friday)

Chair person

Dr. M. L. P. Raju,
Director, School of Management studies ,
MR. PG college, Vizianagaram,
Andhra Pradesh.

9:30 am - 11:00 am

LECTURE-1 Selection, collection and processing of biological samples for FTIR analysis - precautions and troubleshooting by Dr. Ajay Godwin Potnuri, ICMR centenary post doctoral fellow, ICMR NIN , Tarnaka, Hyderabad, Telangana. .The key points discussed by

Dr. Ajay Godwin Potnuri, were

- Types of equipment used in evaluation of biological samples.
- Brief view on FTIR.
- Samples analysis and extraction of data from FTIR.
- Animal models of MetS and biological samples.
- FFPE tissue collection and process .
- Spectral range of various bio samples

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11:00 am - 11:15 am - Tea break

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11:15 am - 12:30 pm

LECTURE-2 Pathophysiological basis of selecting biomarkers in obesity & metabolic disorder research by **Dr. A. Lingesh**, G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad, Telangana.

The key points discussed by **Dr. A. Lingesh**, were

- Types of adipose tissues
- BMI index
- Measurement of obesity in units
- Obesity and Co-morbidities
- Adipose tissue biomarkers in obesity.
- Inflammatory biomarkers in obesity.

FELICITATIONS ON DAY 3

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12:30pm - 1:30pm – Lunch

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1.30 pm – 3.00 pm TRAINING SESSION

Training on strategies, optimisation and configuration of HPLC by Mr. M. Venkata Reddy, Deputy Manager, V. K. T. Pharma, Srikakulam.

The session was very interactive and the delegates actively participated in the interaction.

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3:00 Pm - 3:15 Pm - Tea break

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3.15 pm - 4.15 pm Design of Experiments

4.15 pm - 5.30 pm Valedictory function

Prize distributions

Vote of thanks by

Poojitha of B.Pharmacy 4th year

6. Workshop feedback Analysis

- **Workshop evaluation form was distributed to the delegates on the last day of the workshop.**
- **The feedback was analyzed. The observations are as follows.**
- **Parameters –given in the feedback form - FAIR, GOOD, EXCELLENT**
- **EXCELLENT FEED BACK WAS OBTAINED ON:**

  Resource person knowledge
  Levels of presentation
  Topics covered

- **GOOD FEEDBACK WAS OBTAINED ON:**

  Practical to needs and interests.
  Well organized
  Well paced.
  Food and hospitality.
  Relevant to expected out come
  Interactive sessions

- **FAIR FEED BACK WAS OBTAINED ON**:

  Effective activities
  Visual aids
  Acoustics &handouts

- **OVERALL FEED BACK:** **55% GOOD**
  45% EXCELLENT

- **SUGGESTIONS:** **Time management to be improved**
  More time to be provided for practical session.
  More activities are to be conducted.

7. Follow-up action plan

The following points summarize the potential inputs and next steps identified by workshop participants:

1. Training sessions to be conducted regularly in academic institutions.
2. Working with samples in training sessions to be continued as they provide more insight and absolute sense in training sessions.
3. To plan for more number of technical events.

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